

Title (en)

A METHOD FOR SELECTIVE INCORPORATION OF DOPANT ATOMS IN A SEMICONDUCTIVE SURFACE

Title (de)

VERFAHREN ZUR SELEKTIVEN INTEGRATION VON DOTIERSTOFFATOMEN IN EINE HALBLEITENDE OBERFLÄCHE

Title (fr)

PROCÉDÉ D'INCORPORATION SÉLECTIVE D'ATOMES DOPANTS DANS UNE SURFACE SEMI-CONDUCTRICE

Publication

EP 3787998 B1 20230412 (EN)

Application

EP 19796207 A 20190502

Priority

- AU 2018901480 A 20180502
- AU 2019050406 W 20190502

Abstract (en)

[origin: WO2019210370A1] The present disclosure is directed to a methodology for embedding a deterministic number of dopant atoms in a surface portion of a group IV semiconductor lattice. The methodology comprises the steps of: forming one or more lithographic sites on the surface portion; dosing, at a temperature below 100 K, the surface portion using a gas with molecules comprising the dopant atom and hydrogen atoms in a manner such that, a portion of the molecules bonds to the surface portion; and incorporating one or more dopant atoms in a respective lithographic site by transferring an amount of energy to the dopant atoms. The number of dopant atoms incorporated in a lithographic site is deterministic and related to the size of the lithographic site.

IPC 8 full level

H01L 21/223 (2006.01); **B82Y 40/00** (2011.01)

CPC (source: AU EP KR US)

B82B 3/00 (2013.01 - AU); **B82Y 10/00** (2013.01 - AU); **B82Y 30/00** (2013.01 - AU KR); **B82Y 40/00** (2013.01 - KR); **G01Q 80/00** (2013.01 - AU KR); **G06N 10/00** (2019.01 - EP KR); **G06N 10/40** (2022.01 - AU); **H01L 21/223** (2013.01 - EP KR US); **H01L 21/2252** (2013.01 - KR US); **H01L 21/30** (2013.01 - AU); **H01L 21/322** (2013.01 - AU); **H01L 29/66439** (2013.01 - EP); **H01L 29/66977** (2013.01 - EP); **B82Y 30/00** (2013.01 - EP); **B82Y 40/00** (2013.01 - EP); **G01Q 80/00** (2013.01 - EP)

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

WO 2019210370 A1 20191107; AU 2019262099 A1 20201203; AU 2019262099 B2 20230525; CN 112088140 A 20201215; EP 3787998 A1 20210310; EP 3787998 A4 20220209; EP 3787998 B1 20230412; ES 2945184 T3 20230629; JP 2021528837 A 20211021; JP 7449238 B2 20240313; KR 102637697 B1 20240219; KR 20210003828 A 20210112; SG 11202010534U A 20201127; TW 201946866 A 20191216; TW 1815883 B 20230921; US 11227768 B2 20220118; US 2021242022 A1 20210805

DOCDB simple family (application)

AU 2019050406 W 20190502; AU 2019262099 A 20190502; CN 201980029681 A 20190502; EP 19796207 A 20190502; ES 19796207 T 20190502; JP 2020561656 A 20190502; KR 20207033216 A 20190502; SG 11202010534U A 20190502; TW 108115279 A 20190502; US 201917051739 A 20190502